ARGUMENTS/REMARKS

Claims 1, 3, 9, 14, 61 and 67, 68, 70 and 71 are pending in the present application. Claim 69 has been cancelled by the present amendment. Claims 59, 60, and 63 through 66 remain withdrawn in the present application as being drawn to a non-elected species. Claim 71 has been added to specify the preferred length of the heat transfer conduits as set out at page 17 lines 5 and 6. Claims 2, 10 through 13 and 15 through 58 were canceled by a prior amendment.

In the Office Action, claims 1, 3, 9, 14 and 67 – 70 were rejected under 35 U.S.C.§ 103 (a), as being unpatentable over the combined teachings of Howdry, Kaestner and Loo,

Independent claim 1 has been amended by the introduction of part of the subject matter of Claim 69 as specified at page 17 lines 4 to 6. Claim 1 is now directed to a heat exchanger to control the temperature of a process fluid in a reaction system. Claim 1 provides for, in pertinent part,

"a reaction vessel containing the process fluid"

"a plurality of circumferential heat transfer conduits around the circumference of said reaction vessel to provide a heat transfer surface between the heat transfer conduits and the reaction vessel",

"wherein each of said plurality of heat transfer conduits has a length of at most twice the circumference of said vessel and is separately supplied with heat transfer fluid",

"wherein said plurality of heat transfer conduits number from 10 to 200 and carry a flowing heat transfer fluid" and

"wherein each of said 10 to 200 heat transfer conduits extends around the circumference of the reaction vessel".

Houdry comprises a stack of separate reactors each of which is provided with a single cooling coil (7) that passes six times around the reactor. Each reactor is separately fed with reactants at the top of the reactor (through conduits 17a) and reaction products are taken off at the bottom of each reactor (through conduits 18a). Houdry does not therefore disclose a single reactor vessel provided with a plurality of separately fed circumferential heat transfer elements. (See Elements 15 and 16). Further it does not disclose that the elements have a length of at most twice the circumference of the vessel.

Similarly Kaestner shows in Figures 1 and 4 that each coil has five convolutions of the coil around the vessel and Loo has a minimum of three coils fed from the same source of coolant.

Accordingly none of the references result in a system in which each conduit extends around the circumference of the vessel and that each of the conduits be supplied separately and has a length of at most *twice* the circumference of the vessel as is required by the applicants' claim.

Accordingly no combination of these references will arrive at the features of claim 1.

By the use of the coils that are independently fed and which have a length at most twice the circumference of the vessel the volume of heat transfer fluid required for accomplishing the required degree of temperature control can be significantly reduced and, the accuracy of the temperature control is enhanced.

In the attached Declaration, photographs of the reaction system of the present invention are provided. The Declaration shows a reaction system having and one with a half coil. The photograph of the system of the invention shows feed to alternate conduits, the feed to the other conduits cannot be seen as it is from behind the reactor. For a 400 litre batch reactor, the reactor of the invention requires about 8.5 litres of coolant for good temperature control

whereas the half coil reactor requires about 49 litres. Furthermore, the response time to a change in temperature of the reactor contents can be less than 2 seconds as opposed to ½ up to 1 minute with the half coil reactor.

This is not the advantage acknowledged by Kaestner. Kaestner simply feeds coolant from a single source simultaneously in different locations along the length of the vessel to obtain more uniform cooling than would be achieved if the fluid was introduced only at the bottom of the vessel. There is no recognition in Kaestner that benefits may be achieved by reducing the volume of heat transfer fluid employed by virtue of using *separately fed, short heat transfer conduits, as required by claim 1*.

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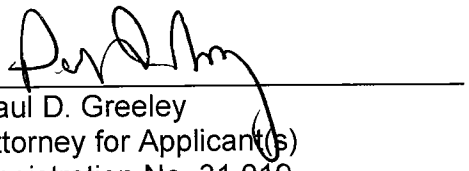
Accordingly, claim 1 is believed patentable and all other claims depend from Claim 1 the rejection based on Ashe GB 2374948 is moot.

Reconsideration and withdrawal of the 35 U.S.C.§ 103(a) rejection are respectfully requested.

In view of the above, it is respectfully requested that the present application is in condition for allowance. Favorable consideration of the present application is respectfully requested.

Consideration and allowance of application is respectfully requested.

Respectfully submitted,



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